

09/153,831
REMARKS

Claims 22-24 have been objected to in view of an informality, claim 25 has been rejected as double patenting over the parent application; claims 22-24 have been rejected as double patenting over the parent application in view of Gefvert as are claims 1-4, 7-10, 20 and 21; claims 1-6, 9, 10, 18, 20-25 have been rejected as anticipated by Suzuki; claim 17 has been rejected as unpatentable over Suzuki in view of Thurston; claims 7-8 have been rejected as unpatentable in view of Suzuki; claims 1-10, 12-16 and 18-25 have been rejected as unpatentable over Gefvert in view of Suzuki; and claim 17 has been rejected further in view of Thurston.

Reconsideration is respectfully requested in view of the attached amended claims and following considerations.

Claim 22 has been amended to include the correction suggested by the examiner.

With respect to the double patenting rejection of claim 25, the claim has been amended to include a limitation to the amplitude gradient between the maximum and minimum being preserved over at least two full octaves. Claim 2 of applicant's parent patent (U.S. Pat. No. 5,809,150) does not include the limitation to the preservation of the amplitude gradient over at least two octaves between the maximum and minimum. Therefore, with this amendment, the double patenting rejection should be avoided.

With respect to the double patenting rejection of claims 22-24, independent claim 22 has also been amended to include a limitation to the amplitude gradient between the maximum and minimum being preserved over at least two full octaves. Neither applicant's

claim 11 in the parent patent nor Gefvert include the limitation to the preservation of the amplitude gradient over at least two octaves between the maximum and minimum. Therefore, with this amendment, the double patenting rejection should be avoided for independent claim 22 and dependent claims 23 and 24.

With respect to the double patenting rejection of claims 1-4, 7-10, 20 and 21, independent claims 1 and 2 have been amended to include a limitation to the amplitude gradient between the maximum and the minimum being preserved over at least two full octaves. Neither applicant's claims 2-4 and 10 of his parent patent nor Gefvert include the limitation to the preservation of the amplitude gradient over at least two octaves between the maximum and the minimum.

With respect to the rejection of claims 1-6, 9, 10, 18 and 20-25 as being anticipated by Suzuki, the Suzuki patent clearly teaches an entirely different approach in creating the sound fields. Suzuki did not recognize the true importance of the location of the maxima and minima of the sound fields versus frequency. In the polar diagrams of FIGs. 7(a)-7(e) in Suzuki, Suzuki is comparing the effect of changing the axis angle θ of the upper driver to the lower driver at 6kHz and 12kHz (one octave). Even in FIGs. 7(b), 7(c) and 7(d) where Suzuki considers the polar plots "most uniform," the nulls and maxima wander around in polar direction between 6kHz and 12kHz. Thus, Suzuki teaches that the polar location nulls and maxima are not stable over a single octave but rather vary as a function of frequency.

In contrast, applicant teaches that the minimum does not substantially vary in polar location over two or more octaves nor does the maximum in applicant's skewed sound fields. As a result, neither does the gradient therebetween. Applicant's independent claims 1, 2, 22 and 25, as amended, now reflect this limitation and therefore distinguish over

Suzuki. The remaining claims, including the new claims, all depend on the above independent claims and therefore should be allowable upon the allowance of the independent claims.

With respect to obviousness, the Suzuki and Gefvert patents, regardless of how they are combined, do not suggest applicant's preservation of the maxima and minima and gradient therebetween over more than two octaves. Gefvert makes no suggestion that the location of the maxima and minima be preserved at less than 180° , and Suzuki only shows by happenstance in the polar diagrams some preservation over one octave. Thurston adds nothing further with respect to the shape of the sound fields or to the preservation of certain features of a skewed sound field as a function of frequency. Further, with respect to FIG. 7(a) of Suzuki, while the maximum is preserved, the minima at 12kHz are obviously different from 6kHz. This FIG. 7(a) surely does not teach or suggest applicant's preservation limitation over more than two octaves.

The remaining rejections of claims concern dependent claims, and in some dependent claims, the added elements of the claim are disclosed in prior art. However, in certain claims, there are distinctions over the prior art.

With respect to claims 7 and 8, FIG. 7(a) shows a sharp minimum between 30° and 60° and at 330° at 12 kHz that is not matched at 6 kHz. Clearly, Suzuki does not disclose or suggest the polar diagrams well below 6 kHz and well above 12 kHz, therefore claims 7 and 8 are believed to distinguish over Suzuki.

With respect to the newly added claims 27-29, 28 and 29 include a specific limitation to a range of 120 Hz and 4 kHz which is outside of the polar diagram range in Suzuki but is specified on page 6, lines 14-17 of applicant's specification.

In view of the above amendments and comments, claims 1-29 are believed allowable.